TO: ETAAC Members

FROM: Jim Hawley

DATE: August 9, 2007

RE: Additional Items for Game Changers Discussion

I think Bob has laid out some very thoughtful and exciting game changing ideas for discussion next week. Please find enclosed some additional items for consideration in next week's discussion.

Clean Fuel Initiative. New energy technologies face significant barriers to market entry and to achieving consumer acceptance that enables them to compete with established technologies. Young companies face the challenge of driving down per unit costs to enable them to be price competitive.

While a market-based trading provides long-term incentives to move to new technologies, the early years of a trading system may not provide resources necessary to jump-start the adoption of new technologies and clean fuels, particularly in sectors like transportation. As the Market Advisory Committee has indicated, "emissions reductions from the transportation sector as a result of the cap-and-trade program are likely to be small both in absolute terms and per dollar of allowance value" because the impact of cap-and-trade on fuel prices would be small. In addition, if the auctioning of allowances is phased in, as contemplated by the Market Advisory Committee, resources sufficient to fund an aggressive rollout of clean transportation technologies may not be available until well after 2012.

An early auction would help address this issue. Also worthy is an interim investment program, of the sort proposed in AB 118, to accelerate the adoption in the short-term of clean fuels and new transportation technologies that are likely to sustain and accelerate over the long run. This proposal would provide financing and/or grants to public agencies, California businesses, public-private partnerships, and academic institutions to drive adoption and deployment of a few significant technologies most likely to produce cost effective technologies for the average consumer that are likely to achieve very broad market adoption and sustained reductions in carbon emissions or those efforts that remove bottlenecks in the broad adoption of new technologies (e.g. fueling pump infrastructure that is subject to the "chicken and egg" problem of do we get vehicles or fueling infrastructure first). The program initially could be funded through modest increases in certain transportation-related fees, as proposed by AB 118, or through other means, and reduced or phased out as auction revenues increase. A few technologies achieving critical mass is far more important than a little bit of everything, especially if it can be done without cutting off future options in alternative technologies.

Projects would be evaluated on a competitive basis, and the board overseeing distribution of funds would focus each year on making a small number of bets on the best of proposals so that selected strategies would have maximum impact. As concepts

are proven and refined, these pilots could be expanded into broader programs. Priorities could include:

- **Advanced biofuel incentives.** The use of advanced biofuels can reduce carbon emissions by 80–90% below levels resulting from use of conventional gasoline. Currently the federal government provides an excise tax exemption for ethanol-blended gasoline that amounts to $.51 per gallon of ethanol, without respect to actual carbon emission reductions achieved. In addition to implementation of the Governor's low carbon fuel standard, the state should consider establishing additional per gallon incentives for advanced biofuels achieving at least a 30% carbon reduction per mile, with a gradual escalation in incentive levels calibrated to the carbon reduction footprint of those fuels.

  To further spur the use and deployment of advanced biofuels, such a program should eventually be expanded as a revenue-neutral "feebate" that levies an incremental tax (or reduces the current rebate given to corn ethanol) on fuels that produce less than a 30% carbon reduction and uses proceeds to further incent the sale of advanced biofuels that achieve at least a 50% reduction in carbon emissions per mile driven.

- **Fueling Infrastructure**. The use of biofuels has been limited by lack of widespread availability. (There are 400,000 flex-fuel cars in California and only one commercial E85 pump. Only 1% of the state's flex fuel cars actually use alternative fuels). In connection with requirements to promote the sale of alternative-fueled vehicles, the state would provide incentives for the rollout of fueling pumps that would provide E85, butanol, and future biofuels. Such a program could provide 75% of the cost of the pump to small station owners (predominantly small businesses), with a declining subsidy as use increases–for example, up to $30,000 in the first year, $20,000 in the next year and so on, provided that eligibility would be limited to high-volume locations. Mandating very high volume locations with greater than $5m per year in liquid fuel revenues to have at least one E85 pump would be an attractive and affordable option.

- **Advanced biofuels production.** A high-profile prize competition of the sort proposed by the California Secure Energy Partnership (CalSTEP) would identify criteria for meeting goals and targets (including product characteristics and sales requirements) and reward winners with cash and/or advanced market commitments. For example, a program could (1) jump-start advanced renewable fuel production from in-state resources by providing awards and financing to teams of applicants that successfully demonstrate the technical and financial ability to construct a pilot-scale or first-production scale cellulosic ethanol production utilizing in-state plants and materials; (2) develop biomass crop cultivation scheme for sustainable cultivation, low water and fertilizer use; (3) develop improved batteries and other strategies to promote deployment of electric or plug-in hybrid technologies; or (4) address other key challenges related to clean technology.

California Clean Tech Manufacturing Incentive. The worldwide energy market is $2 trillion per year and the clean tech represents an enormous growth opportunity for California, which has established itself as a clear policy leader. More than $2.9 billion was invested in clean tech in 2006, and for every $100 million invested 2,700 jobs are

created. According to Environmental Entrepreneurs, venture capital investment in clean tech start-ups has the potential to seed the creation of 52,000 to 114,000 high-quality jobs and $11 to $25 billion in annual revenue in California by 2010.

While the state is ideally positioned to be a clean tech leader, focused public policy efforts are needed to ensure that California realizes the potential job creation and economic opportunity benefits. Unfortunately, California's outdated, poorly structured tax and fiscal policies make it difficult to compete with other states to attract clean tech manufacturing facilities. While many states provide incentives to attract clean tech investment, California *reduces* the income tax burden on companies who pursue expansion out of state and *increases* it on those who hire and expand in-state. California's imposition of a sales tax on manufacturing equipment installed for in-state use makes capital-intensive expansion here significantly more expensive than almost any other state.

Programs like the Self Generation Incentive Program (SGIP), where most of the funds go to non-California technologies, have not been optimized to maximize economic growth prospects for the state. As states actively compete for the high-skilled, good-paying manufacturing positions, California risks subsidizing growth elsewhere and losing job growth opportunities.

California should act to remove the current disincentives in the state's income tax code that reduce a company's tax bill when it decides to grow outside of California, and also take action to ensure that capital investment in California is competitive with other states.

Further, California's incentive programs like the SGIP should designate an additional level of funding for California manufactured technologies, thereby creating an incentive for companies to choose California manufactured technologies. Such approaches are underway in other states like Massachusetts and Washington. For example the Massachusetts Technology Collaborative (MTC) offers Renewables Initiative Rebates similar to California's Self Generation Incentive Program (SGIP), with an additional incentive level (an extra $0.25/watt for solar and an extra $2.00/watt for fuel cells) if Massachusetts-manufactured components are used. The State of Washington has established production incentives for individuals, businesses, or local governments that generate electricity from solar power, wind power or anaerobic digesters. The incentives range from $0.12/kWh - $0.54/kWh, depending on technology type and where the equipment is manufactured.

If California is successful in capturing its share of growth in clean tech manufacturing, California will need to further upgrade the skill levels of its clean tech workforce. As proposed by the Apollo Alliance, the state should conduct outreach to young clean tech companies to educate them about tools like California's Employment Training Program, which has been used by many industries, including the technology industry, to upgrade workforce skills.

Smart Communities. Beyond vehicle technologies and fuels, it is essential that the state find ways to reward energy-efficient and climate-friendly land-use planning and transportation. California's current development patterns cause congestion and traffic that cost consumers and businesses approximately $17 billion annually and result in more than 665 million gallons of wasted fuel per year.

The state can realize significant carbon reductions by adopting smart growth patterns that maximize the use of public transportation, allow people to live closer to where they work and promote innovative arrangements like telecommuting. As an integral part of its smart growth efforts, the state should promote increased broadband deployment and use, as proposed by the Governor, to enable the broader use of telecommuting.

The state should link new state infrastructure spending ~~s~~ such as that authorized in the recently passed bond package~~s~~ ~~t~~o the implementation of regional blueprints that will prevent sprawl, reduce the need to drive and reduce overall miles traveled. The state should also implement the Governor's broadband plan to reduce deployment barriers by facilitating joint builds by among providers and requiring deployment of conduit in most road or transit construction projects.

Technology Certification. While this proposal does not qualify as a "game changer," it is worth noting that the prompt evaluation and documentation of the energy and carbon reduction potential of new technologies is vital to getting them to market. Manufacturers in sectors like solar and fuel cells typically obtain independent certification that their technologies will deliver as promised in order to qualify for state incentives. As to biofuels, differences in how feedstocks are produced and processed complicate determination of a fuel's carbon reduction performance.

Anecdotal reports indicate growing backlogs at the two solar certification centers in the US. Given the enormous investments in technology development that have been made in recent years in new technologies, and the likely growth in the number of incentive programs to stimulate use of new fuels and energy technologies, the need for certification of the efficacy and carbon-reduction performance of new technologies will certainly increase. California should monitor the backlog and, if necessary, consider strategies to ensure that certification is efficient and timely.